

## CLAIMS

1. A voice and musical tone coding apparatus comprising:

5 a quadrature transformation processing section that converts a voice and musical tone signal from a time component to a frequency component;

10 an auditory masking characteristic value calculation section that finds an auditory masking characteristic value from said voice and musical tone signal; and

15 a vector quantization section that performs vector quantization changing a calculation method of a distance between a code vector found from a preset codebook and said frequency component based on said auditory masking characteristic value.

2. A voice and musical tone coding apparatus comprising:

20 a base layer coding section that codes a voice and musical tone signal and generates base layer coded information;

25 a base layer decoding section that decodes said base layer coded information and generates a base layer decoded signal; and

an enhancement layer coding section that codes a differential signal of said voice and musical tone signal

and said base layer decoded signal and generates enhancement layer coded information, wherein said enhancement layer coding section includes:

an auditory masking characteristic value  
5 calculation section that finds an auditory masking characteristic value from said voice and musical tone signal;

a quadrature transformation processing section that converts said differential signal from a time component  
10 to a frequency component;

and a vector quantization section that performs vector quantization changing a calculation method of a distance between a code vector found from a preset codebook and said frequency component based on said auditory  
15 masking characteristic value.

3. The voice and musical tone coding apparatus according to claim 1, wherein, when one of said voice and musical tone signal frequency component and said code  
20 vector is within an auditory masking area indicated by said auditory masking characteristic value, said vector quantization section performs vector quantization changing a calculation method of a distance between said voice and musical tone signal frequency component and  
25 said code vector based on said auditory masking characteristic value.

4. The voice and musical tone coding apparatus according to claim 1, wherein said vector quantization section performs vector quantization based on a code vector found from a shape codebook and a code vector found  
5 from a gain codebook.

5. The voice and musical tone coding apparatus according to claim 1, wherein said quadrature transformation processing section converts said voice  
10 and musical tone signal from a time component to a frequency component by means of a modified discrete cosine transform (MDCT), a discrete cosine transform (DCT), a Fourier transform, or a quadrature mirror filter (QMF).

15 6. The voice and musical tone coding apparatus according to claim 2, further comprising at least one enhancement layer coding section, wherein said enhancement layer coding section codes a difference between an input signal for an upper-level enhancement  
20 layer coding section and a decoded signal of enhancement layer coded information generated by said upper-level enhancement layer coding section, and generates enhancement layer coded information.

25 7. The voice and musical tone coding apparatus according to claim 2, wherein said base layer coding section codes an input signal by means of CELP type voice

and musical tone signal coding.

8. A voice and musical tone coding method comprising:
  - a quadrature transformation processing step of transforming a voice and musical tone signal from a time component to a frequency component;
  - an auditory masking characteristic value calculation step of finding an auditory masking characteristic value from said voice and musical tone signal; and
  - a vector quantization step of performing vector quantization changing a calculation method of a distance between a code vector found from a preset codebook and said frequency component based on said auditory masking characteristic value.

9. A voice and musical tone coding program that causes a computer to function as:

- a quadrature transformation processing section that converts a voice and musical tone signal from a time component to a frequency component;
  - an auditory masking characteristic value calculation section that finds an auditory masking characteristic value from said voice and musical tone signal; and
  - a vector quantization section that performs vector quantization changing a calculation method of a distance

between a code vector found from a preset codebook and said frequency component based on said auditory masking characteristic value.